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FABRICATION OF SINGLE SERVICE CONTAINERS AND CLOSURES FOR MILK AND MILK PRODUCTS. GUIDE FOR SANITATION STANDARDS

Public Health Service
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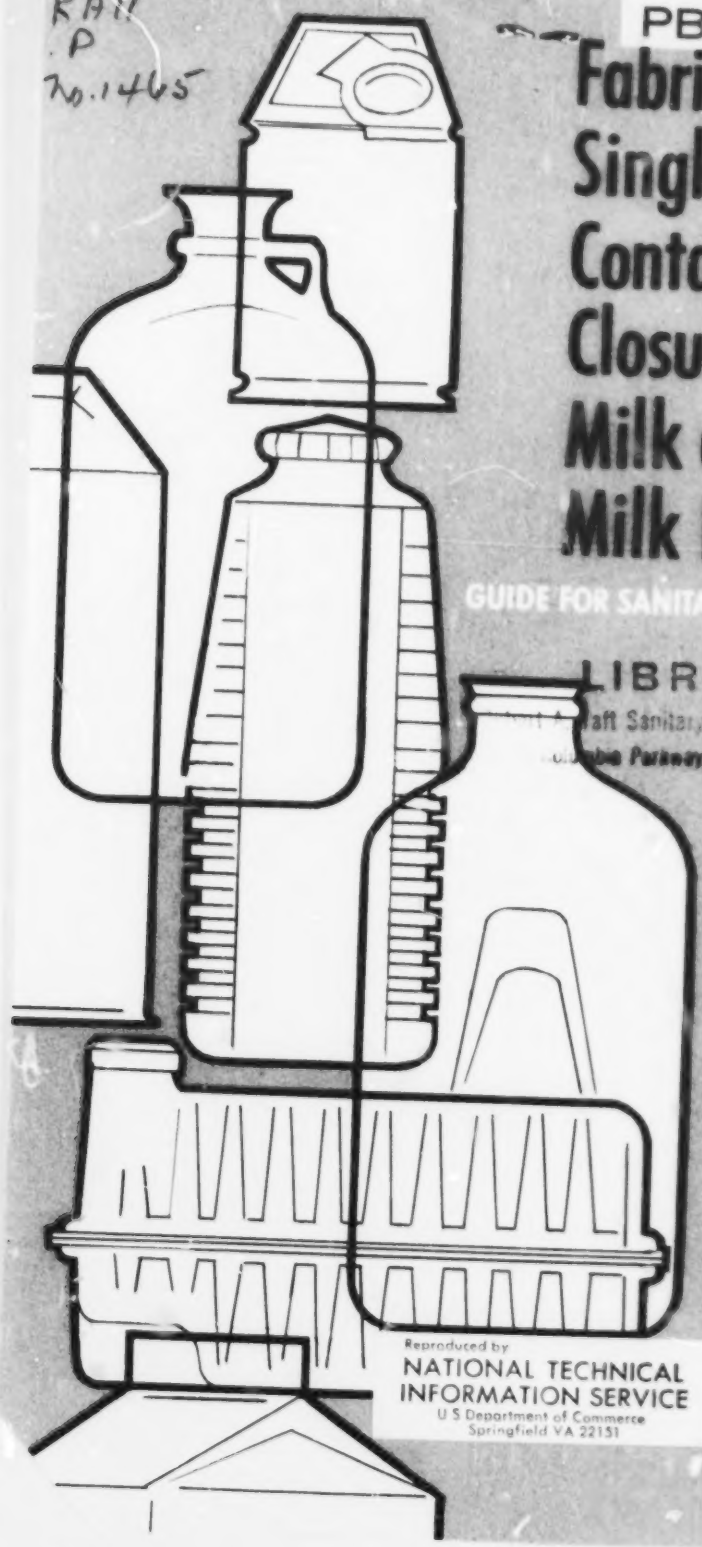
GUIDE FOR SANITATION STANDARDS



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FABRICATION OF SINGLE-SERVICE CONTAINERS AND CLOSURES
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A GUIDE FOR SANITATION STANDARDS
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ERRATA

Page 8

16.a. Change this sentence to read: "Single-service containers and closures for milk and milk products shall not be fabricated on equipment used for the manufacture of products made of non-food grade materials unless such equipment has been thoroughly cleaned and/or purged of all non-food grade materials."

16.d. Change this sentence to read: "The manufacture of single-service containers and closures for milk and milk products shall be carried on in such a manner that there will be no cross contamination of raw materials with non-food grade materials."

Fabrication of Single Service Containers and Closures for Milk and Milk Products

GUIDE FOR SANITATION STANDARDS

1966

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service
Division of Environmental Engineering and Food Protection
Milk and Food Branch
Washington, D.C. 20201

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PREFACE

Paper single-service containers and closures have been used in the dairy industry for many years. Industry-applied controls in manufacturing and handling coupled with certain characteristics inherent in both the materials and manufacturing process have made it possible for these products to reach the point of use in a sanitary condition free from toxic materials which may migrate into milk or milk products.

Within recent years single-service container manufacturers have introduced new materials, equipment, and design concepts for these containers and closures. Evaluation of the industry's basic manufacturing and handling techniques and establishment of sanitation criteria will assure that single-service containers and closures and the materials from which they are formed will continue to be safe and in compliance with bacteriological standards of item 12p of the *Grade "A" Pasteurized Milk Ordinance—1965 Recommendations of the United States Public Health Service*.

A. PURPOSE AND SCOPE*

These standards will serve as a guide to insure the continued production of consistently sanitary containers and closures for milk and milk products, as defined in the Pasteurized Milk Ordinance.[1]

The requirements of this standard shall apply to all blank fabricators, closure manufacturers, plastic laminators, sheet formers, blow molders, vacuum formers, extruders, injection molders, preformers, and similar plants; also to the installation and maintenance of equipment used in compounding materials for the fabrication, production, handling, and storage of single-service containers and closures.

B. DEFINITIONS

The following definitions shall be employed in the application of these sanitation standards.

1. Single-Service Container: Shall mean any container having a milk or milk product-contact surface and used in the packaging, handling, transporting, storage or serving of milk and milk products, which is intended for one usage only.

2. Closure: Shall mean a cap, lid, seal, or other device, in or on a container, used for the purpose of enclosing the contents.

3. Bacteriological Standards: Shall mean the bacteriological standards for single-service articles set forth in the Pasteurized Milk Ordinance.[1]

4. Blank or Knock-Down-Flats: Shall mean plastic, paper, or plastic laminated paper, metal or any combinations thereof which are all or part of a container or closure to be formed into a container, excluding powdered or pelleted materials.

5. Paper Stock: Shall mean any paper made from the following materials:

a. Clean, Sanitary Paper Stock: Clean sanitary paper stock shall mean any paper, paperboard, and laminated paper made from clean, sanitary virgin chemical or mechanical pulp or from broke, waste, or cuttings of such paper, paperboard, and laminated paper, provided they have been handled, treated, and stored in a clean, sanitary manner.

b. Components meeting the requirements of the Food and Drug Administration.[2]

6. Broke and Waste or Cuttings: Broke and waste or cuttings shall mean paper, paperboard and laminated paper that have been dis-

*NOTE: These requirements shall not apply to paper mills or resin manufacturing plants.

carded anywhere in the process of manufacture, such as on paper-making machines in the form of trim. (Similar products in converting plants are called trim waste or cuttings.)

7. Plastic Molding, Extrusion and Laminating Resins: Plastic molding extrusion and laminating resins shall mean:

a. Resins or an intimate admixture of resins with other ingredients which meet the requirements of the Food and Drug Administration;[2] and

b. Plastic composed solely of clean cuttings or regrind from in-plant operations, provided they have been handled and maintained in a sanitary manner.

8. Nontoxic Materials: Shall mean materials which are free of substances which may render the milk injurious to health or which may adversely affect the flavor, odor, composition, or bacteriological quality of the product and which meet the requirements of the Food and Drug Administration.[2]

9. Metals: Shall mean metals which are nontoxic, nonabsorbent, and corrosion resistant.

10. Coatings: Any layer or covering complying with 8 above which is applied to the product-contact surface.

11. Product-Contact Surfaces: Shall mean those surfaces of the container and closure with which the product comes in contact during filling, storage or use.

12. Sanitization: Sanitization is the application of any effective method or substance to a clean surface for the destruction of pathogens and of other microorganisms as far as is practicable. Such treatment shall not adversely affect the equipment, the milk or milk product, or the health of consumers. Chemical sanitizers shall meet the requirements contained in the last paragraph in Part 1 of Appendix F of the Pasteurized Milk Ordinance.[1]

13. Single-Service Articles: Shall mean those articles which are constructed wholly, in part or in combination from paper, paperboard, molded pulp, plastic, metals, coatings or similar materials which are intended by the manufacturer for one usage only, and are manufactured, handled, wrapped, packaged, transported and stored in such a manner as to protect them from contamination.

14. Preformed Container: Shall mean a container in a completed form ready for filling.

C. BACTERIAL STANDARDS AND EXAMINATION OF SINGLE-SERVICE CONTAINERS AND CLOSURES

1. Paper stock shall meet the bacteriological standard of not more than 250 colonies per gram as determined by the disintegration test. The supplier of the paper stock shall certify that his paper stock was manufactured in compliance with this standard.

2. The residual bacterial count of single-service containers and closures used for pasteurized milk and milk products shall not exceed one colony per ml. of capacity or not over 50 colonies per 8 square inches (1 per square centimeter) of product-contact surface in 3-out-of-4 samples taken at random on a given day. All single-service containers shall be free of coliform organisms.

Representative samples should be taken at least quarterly and analyzed at an official laboratory, commercial laboratory, or industry laboratory approved by the State milk laboratory certifying agency or the Public Health Service, specifically for the examinations required under these standards. Procedures for obtaining samples and for the laboratory examination of these products are contained in a Manual of Recommended Methods for Sampling and Microbiological Testing of Single-Service Food Packages and Their Components [3] and shall be in substantial compliance with Standard Methods (latest edition).[4] Such procedures and examinations shall be evaluated in accordance with the methods of evaluating milk laboratories recommended by the United States Public Health Service.[5,6]

D. SANITATION STANDARDS

NOTE: To be used in conjunction with Form PHS–723–3 "Manufacturing Plant Inspection Report—Single-Service Milk Containers." For sale by Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

Fabricating plants shall meet the following requirements:

1. Buildings and Rooms:

a. All rooms shall be of sufficient size to allow for the proper installation of equipment and to facilitate its maintenance.

b. All fabricating areas shall be separate from nonproduction areas to protect against contamination, provided that storage of packaged, finished products shall be permitted in production areas when areas so used comply with all sanitation requirements applicable to production areas.

c. The structure shall be rodent proof to the extent necessary to prevent the entry of rodents.

2. Floors:

a. The floor shall be smooth, impervious, and maintained in a state of good repair, and shall be kept clean and free from waste, litter, and extraneous material. This does not exclude properly treated wooden floors in existing single-service container and closure plants.

b. The joints between the walls and the floor shall be tight and

impervious. Production areas in new operations shall have coved joints.

c. Floor drains when provided shall be properly trapped.

3. Walls and Ceilings:

a. Walls of production areas shall have a smooth, cleanable, light-colored surface and shall be kept clean and in good repair.

b. Ceilings in storage and production areas shall be kept clean and in good repair.

c. Overhead beams, fixtures, pipes, and ducts shall be cleaned periodically.

4. Doors and Windows:

a. There shall be no opening into living quarters.

b. All outside openings shall be effectively screened and/or otherwise protected against the entry of insects, dust, and airborne contamination and shall be kept closed during dusty weather.

5. Lighting and Ventilation:

a. All rooms shall be adequately lighted by either natural light, artificial light, or both. A minimum of 20 footcandles should be mantained in production areas and 5 footcandles in storage areas.

b. Ventilation shall be sufficient to prevent excessive odors and the formation of excessive water condensation.

6. Toilet Facilities:

a. All plumbing shall comply with the State and local plumbing codes.

b. Toilet rooms shall have self-closing doors and in new construction shall not open directly into processing areas.

c. The toilet room and fixtures shall be maintained in a clean and sanitary condition, in good repair, and shall be free from flies.

d. Each toilet room shall be well lighted and adequately ventilated to the outside.

e. Signs reminding employees to wash their hands before returning to work shall be posted in all toilet rooms.

7. Water Supply:

a. The potable water supply shall be approved by the State or local regulatory authority.

b. There shall be no cross-connection between the potable water supply and any unsafe or questionable water supply or any source of pollution through which the safe water supply might become contaminated. A connection between the water supply piping and a makeup tank (such as for cooling or condensing), unless protected by an air gap or effective backflow preventer, constitutes a violation of this requirement.

c. Water contacting any containers or closures must be potable. Any nonpotable water supply for plant purposes shall be used only under conditions acceptable to the regulatory agency. When approved by the health authority, plant water from closed systems may be reused when all necessary means of protection are afforded to preclude contamination of the containers and closures. If continuous chlorination is necessary, the individual character of the supply shall be investigated and a treatment program developed which shall produce a safe supply. Such water may also be used for boiler feed makeup water, plant cleanup and cooling water.

8. Handwashing Facilities:

a. Hot and cold and/or warm running water, soap, and air dryers or individual sanitary towels shall be provided.

b. Handwashing facilities shall be kept clean and shall be conveniently located to the fabricating area and toilet facilities.

c. Fixtures operated by elbow, knee or foot controls are recommended.

9. Storage of Finished Containers, Closures, Paper, and Plastic: (Goods in process and finished products):

a. Blanks and all other single-service articles shall be stored on pallets above the floor and away from any wall to facilitate cleaning and provide protection from contamination. The requirement for the storage on pallets shall not include roll stock of paper, paperboard, or plastic roll stock provided the trimmed ends and/or sufficient turns are discarded.

b. Appropriate clean, dry storage facilities shall be provided for single-service containers, closures, paper for wrapping, adhesives, blanks, and other production materials to provide protection from splash, insects, dust, and other contamination.

c. Where containers and closures are preformed in plants other than the original converting facility:

(1) Flat containers, blanks, and closures shall be stored in the original cartons and sealed until used.

(2) Partially used cartons of flat containers, blanks, and closures shall be resealed until used.

10. Locker and Lunch Rooms:

a. Locker and lunch rooms shall be separate from plant operation, and be equipped with self-closing doors. The rooms shall be kept in a clean and sanitary condition.

b. Cleanable refuse containers shall be provided which are covered, impervious, leakproof, and readily accessible.

11. Disposal of Wastes:

a. Disposal of sewage and other wastes shall be in a public sewerage system or in a manner in compliance with State and local plumbing codes.

b. All refuse shall be stored in covered containers (see 10b). This is not intended to include material rejected in production.

c. Refuse containers shall be properly identified.

12. Surroundings: Immediate plant surroundings shall be kept clean, neat, and free from conditions which might attract or harbor flies, other insects, and rodents, or which otherwise constitute a nuisance.

13. Miscellaneous Protection From Contamination: (within the plant):

a. An effective insect and rodent control program shall be in evidence.

b. Only pesticides approved for use by the regulatory agency and/or registered with the U.S. Department of Agriculture shall be used for insect and rodent control.

c. There shall be no contamination from leakage or condensation from overhead piping.

d. Whenever air under pressure is directed at a milk or milk product-contact surface, it shall be free of oil, dust, rust, excessive moisture, extraneous materials, and odor, and shall otherwise comply with the 3–A Accepted Practices for Air Under Pressure.[7]

14. Personnel—Cleanliness:

a. Hands shall be thoroughly washed before commencing plant functions, and as often as may be required to remove soil and contamination, and before returning to work after visiting the toilet room.

b. All personnel shall wear clean outer garments, and women shall wear effective hair nets, head bands, caps or other hair restraints.

c. No person affected with any disease in a communicable form, or while a carrier of such disease, and no person with an infected cut or lesion shall work in any processing area in any capacity where there is a likelihood of such person contaminating product-contact surfaces with pathogenic organisms.

15. Container and Closure Equipment: This section is intended to include all equipment and processes used in the fabrication of containers and closures irrespective of the materials used whether or not mentioned herein.

a. Fabricating Equipment—Plastic Laminated Paper and/or Foil.

(1) Rolls, dies, belts, tables, mandrels and all other contact surfaces shall be kept clean. Equipment designed for milk plant use, which is utilized for preforming containers shall be cleaned and sanitized prior to operation. Contact surfaces shall be kept reasonably free of accumulations of paper dust and other production soils.

(2) All goods in process for containers and closures shall be protected from contamination by condensate or drippage from overhead pipes or equipment parts. Upright, open, formed containers shall be protected from contamination by overhead shields.

(3) Machines, units and appurtenances shall be kept clean, provided that minor accumulations of paper dust and other production soils incidental to normal converting operations will not violate this requirement.

b. Fabricating Equipment—Wax Coated Paper and/or Foil.

(1) Machines, units and appurtenances shall be kept clean, provided that minor accumulations of paper dust and other production soils which are incidental to normal converting operations will not violate this requirement.

(2) All product-contact surfaces shall be kept clean and reasonably free of accumulations of paper dust and other production soils.

(3) Open waxed containers shall be protected from contamination by condensate or drippage from overhead pipes or equipment parts.

(4) The wax shall be of a proper level to completely coat the container or closure and shall be kept at a temperature of 140° F. or above.

c. Forming Equipment—Plastic.

(1) Contact surfaces shall be clean.

(2) Upright open containers and closures shall be protected from contamination by overhead shields.

(3) Machines, units and appurtenances shall be kept clean, provided that minor accumulations of plastic resin dust and other production soils incidental to normal converting operations will not violate this requirement. Some of this equipment will include:

(*a*) Grinders (shall be above the floor).
(*b*) Rollers.
(*c*) Extruders and fittings.
(*d*) Sheeting dies.
(*e*) Hopper at extruder.
(*f*) Reamers and cutters.
(*g*) Silos and resin storage bins.

16. Equipment and Materials for Construction of Containers and Closures:

a. Only plastic compounds, paper, and container and closure components which are nontoxic and formulated to meet the requirements of the Food and Drug Administration [2] shall be fabricated on equipment used for the manufacture of containers and closures for milk and milk products.

b. Only plastic sheeting and extrusions, plastic laminated paper, metal, and paperboard blanks, or combinations thereof, from a manufacturing and/or fabricating plant conforming with these standards shall be used.

c. Only sanitary, nontoxic lubricants shall be used on container contact surfaces.

d. Only products manufactured from materials complying with Food and Drug Administration requirements may be fabricated in rooms used for fabricating milk and milk product containers and closures.

17. Waxes, Adhesives and Inks:

a. Shall be stored in covered containers in a clean and adequately ventilated room.

b. Unused materials shall be properly stored.

c. Shall not impart odor or taste to the milk or milk product, and shall not contaminate the product with microorganisms, or toxic or injurious substances.

d. Transfer containers shall be kept clean.

18. Handling of Containers and Equipment: Handling of fabricated containers, and container and closure contact surfaces shall be kept to a minimum.

19. Wrapping and Shipping: Blanks, closures, halves and nested and preformed containers shall be properly wrapped prior to shipping, and the wrapper shall protect the contents from dust and other contamination.

REFERENCES

1. Grade "A" Pasteurized Milk Ordnance—1965 Recommendations of the United States Public Health Service.
2. Federal Food, Drug, and Cosmetic Act, as Amended and regulations issued thereunder.
3. Manual of Recommended Laboratory Methods for Sampling and Microbiological Testing of Single-Service Food Packages and Their Components—Microbiological and Biochemical Center, Syracuse University Research Corporation.

4. Standard Methods for the Examination of Dairy Products of the American Public Health Association.
5. Milk laboratories approved by Federal and State agencies, Public Health Service Publication No. 999–FP–5.
6. Evaluation of Milk Laboratories, Public Health Service Publication No. 999–FP–3.
7. 3–A Accepted Practices for Supplying Air Under Pressure in Contact With Milk, Milk Products, and Product-Contact Surfaces.

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